



# UNITED STATES PATENT AND TRADEMARK OFFICE

111  
UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/772,181	02/04/2004	Yasuo Tsunogae	10936-35A	4682
24256	7590	08/17/2006	EXAMINER	
DINSMORE & SHOHL, LLP 1900 CHEMED CENTER 255 EAST FIFTH STREET CINCINNATI, OH 45202				TESKIN, FRED M
ART UNIT		PAPER NUMBER		
		1713		

DATE MAILED: 08/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/772,181	TSUNOGAE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Fred M. Teskin	1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on \_\_\_\_.
- 2a) This action is **FINAL**.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 16-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_ is/are allowed.
- 6) Claim(s) 16-23 is/are rejected.
- 7) Claim(s) \_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. ____.
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>041305</u> .	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: ____.

The preliminary amendment of February 4, 2004 has been entered in full.

Claims 16-23 are currently pending and under examination.

The disclosure is objected to because of the following informalities: the related application data should be updated to include the present status of the parent application. Appropriate correction is required.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claims 16-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. More specifically, the following grounds for indefiniteness apply to the indicated claims.

(A) Claims 17 and 18 each provide the limitation to "the cycloolefin polymer". There is insufficient antecedent basis for this limitation in the claim. Compare, e.g., claim 16, line 2, where "a polymer ..." is broadly recited.

(B) Similarly, claim 20 refers to "the organic solvent" (see lines 4-5), which is an improper indirect limitation of "a solvent" as earlier recited therein.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 16-23 are rejected under 35 U.S.C. 102(e) as being anticipated by US 5783639 to Kataoka et al ("Kataoka").

The claimed invention, as defined in claim 16, is a dry film formed from a curable resin composition comprising a polymer having a number average molecular weight ( $M_n$ ) within a range of 1,000 to 1,000,000 as measured by gel permeation chromatography, and a hardener. Claim 17 further limits the (cycloolefin) polymer by specifying at least 50 mol% of a repeating unit derived from a cycloolefin monomer and a glass transition temperature of at least 100°C as measured by differential scanning calorimeter. Claim 18 specifies that the (cycloolefin) polymer has a polar group (e.g., epoxy as per Specification page 25). Claim 19 limits the curable resin composition to a varnish comprising an organic solvent.

Kataoka discloses a resin composition comprising an epoxy group-containing cycloolefin resin and crosslinking agent, the composition characterized by, *inter alia*, excellent heat resistance, solvent resistance, *low water absorption* property, electrical insulating property, adhesion and chemical resistance, and by suitability as a layer insulation film for circuit boards, semiconductor devices and electronic components,

including inter-layer insulation material between wiring layers (col. 1, II. 16-25; col. 2, II. 51-65; col. 3, II. 10-20 and col. 13, II. 30-33).

Regarding "dry film" formation, Kataoka describes film obtained by coating a solution of its photosensitive resin composition on a substrate. As per column 11, lines 35+, the solution is coated on a substrate, *dried* and then optionally prebaked; the coating film thus obtained may be then cured by heating. The thin films so obtained are said to have a water absorption of at most 0.1 % (col. 12, II. 36-38), which corresponds to water absorption values given for the cycloolefin polymer of the present invention (cf. Specification page 18). Further, in the working examples, e.g., Example 1, Kataoka demonstrates the above-noted film coating procedure, including the step of *drying* cast film formed from a xylene solution of epoxy-modified thermoplastic resin A and a specific bisazide *curing agent*. As per Referential Example 1, said resin A has a Mn (26,000) and glass transition temperature (154°C) meeting the corresponding limitations of claims 16 and 17 and is wholly constituted of a specific cycloolefin monomer (see col. 13, II. 40-55). In addition, xylene is an organic solvent within the "varnish" limitation of claim 19 (cf., xylene isomers mentioned as varnish components at page 56 of the Specification).

As such, Kataoka is seen to disclose a dry film meeting all the essential limitations of claims 16-19.

Regarding claims 20 and 21, Kataoka provides for prebaking the dried film prior to curing by heating as noted above and, in Example 8 (as well as 9-15), describes specific prebaking conditions (80°C for 90 sec.) whereby a film-coated silicon wafer is

formed. The coated film is subsequently provided with via holes then cured by heating at 250°C for three hours and a copper layer formed over the surface of the coating film (see col. 17, ll. 23-35). The prebaking conditions (prior to curing) are considered to qualify as solvent removal conditions within the recitations of claim 20, final three lines. Similarly, the copper layer formed over the surface of the described coating film is seen to meet the claim 21 limitation of a “conductive layer formed on the surface of the insulating layer”.

As such, Kataoka is seen to disclose a process and laminate conforming to the essential limitations of claims 20-21.

Regarding claims 22 and 23, at least Examples 16-21 of Kataoka describe insulating film cast from an organic solvent solution of an epoxy-modified cycloolefin resin and a crosslinking agent onto a silicon wafer and wherein via holes were subsequently formed (see col. 19, lines 25+ and col. 20, ll. 30-33). As per the corresponding Referential Examples, all of the cycloolefin resins used in Examples 16-21 meet the Mn limitation of these claims. Further, Example 16 details the repetition of a step corresponding to step (B) of claim 23; that is, the step of coating *again* the same solution of the photosensitive resin composition used previously, on the copper-plated surface of the coating film, followed by repeating the “same procedure as described above” to fabricate a circuit board having two insulating layers and two wiring (i.e., conductive) layers (see col. 19, ll. 60+).

As such, Kataoka is seen to disclose a multi-layer laminate and process for producing same that meet all the essential limitations of claims 22-23.

Accordingly, the applied reference is deemed to provide an adequate basis to justify an anticipation rejection of applicants' claims.

No claims are allowable at this time.

Any inquiry concerning this communication should be directed to Examiner F. M. Teskin whose telephone number is (571) 272-1116. The examiner can normally be reached on Monday through Thursday from 7:00 AM - 4:30 PM, and can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The appropriate fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



FRED TESKIN  
PRIMARY EXAMINER  
1713